Ohio EPA
40 years and moving forward

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

September 4, 2013

Ms. Jane Powell
Fernald Site Manager
DOE-LM-20.1
10995 Hamilton Cleves Hwy
Harrison, Ohio 45030

RE: COMMENTS – FERNALD PRESERVE 2012 SITE ENVIRONMENTAL REPORT AND SUMMARY (APPENDICES A through D), MAY 2013

Ms. Powell:

Ohio EPA has received and reviewed Fernald Preserve's "2012 Site Environmental Report and Summary (Appendices A through D)", dated May 2013. Ohio EPA comments are enclosed.

If you have any questions, please contact me at (937) 285-6466.

Sincerely,

Thomas A. Schneider
Fernald Project Manager
Division of Environmental Response and Revitalization
Federal Facilities Section

Enclosure

cc: Tim Fischer, US EPA
Bill Hertel, Stoller Corporation

TAS\bp

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OHIO EPA COMMENTS ON THE FERNALD PRESERVE SITE ENVIRONMENTAL REPORT, MAY 2013

General Comments:

1. Commenting Organization: Ohio EPA Commentor: DDAGW
   Section: General/groundwater Page: Line: Code: C
   Comment: The uranium ground water extraction system has achieved significant mass removal, plume contraction, and hydraulic containment since initiation of the first module in 1993. The uranium plume as defined by the 30 ug/L final remediation level (FRL) has declined to approximately 130 acres, and approximately 11,313 net pounds of uranium have been removed (Fernald Preserve 2012 Site Environmental Report). With the ultimate measure of system success being attainment of the uranium FRL however, Ohio EPA requests that future reports emphasize FRL attainment progress. Specific comments and recommendations for emphasizing attainment are provided below.

Comments:

2. Commenting Organization: Ohio EPA Commentor: DDAGW
   Section: ES and Section 3.3 Groundwater Monitoring Highlights
   Page: Line: Code: C
   Comment: Ohio EPA recommends future reports include an established cleanup timeframe objective for attaining the uranium FRL (30 ug/L), and compare annually updated predictions to the objective timeframe as a measure of progress. According to the OU-5 Feasibility Study (DOE 1995 c.), the ground water extraction system was predicted to achieve attainment of 20 ug/L in 27 years.

3. Commenting Organization: Ohio EPA Commentor: DDAGW
   Section: Appendix A, A.1.4 Total Uranium Data
   Page: Line: Code: C
   Comment: Ohio EPA requests that reported net uranium mass removed to date compared to year 2024 predictions, not be referred to as estimated percent "complete." Three estimations of mass removal "completeness" through December 2012 are compared as follows (page 4): 77% (exponential regression curve of historic concentrations), 80% (fate and transport model predictions), and 47% (95% upper confidence limit of exponential regression curve of historic concentrations).

   If system shutdown is anticipated in year 2024, as appears indicated, then justification should be provided. The percentage of net mass removed each year compared to the benchmark year 2024 highlights that uranium mass removal is declining with time, as expected. Though mass removal predictions are useful, clarification should be provided that such predictions are not necessarily a reflection of uranium FRL attainment progress.

4. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: Appendix A, A.1.4 Total Uranium Data
Page: Line: Code: C
Comment: Ohio EPA requests that the difference (residual) between regression curve predictions of uranium concentration, versus actual concentration, be tabulated and discussed annually for each extraction well. Discussion is requested because in all but six of the twenty-three extraction wells (RW-2, RW-4, EW-15a, EW-17, EW-25, EW-31), predictions have become lower than actual concentration (operational data).

5. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: Appendix A, A.1.4 Total Uranium Data
Page: Line: Code: C
Comment: Ohio EPA requests that the difference between fate and transport modeled uranium, versus actual concentration, be tabulated and discussed annually for each extraction well. Discussion is requested because in all but six of the twenty-three extraction wells (RW-4, EW-126, EW-17, EW-25, EW-28, and EW-33a), modeled predictions have become lower than actual concentration (operational data).

6. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: Appendix A, A.1.4 Total Uranium Data
Page: Line: Code: C
Comment: Page five notes the emergence of steady (asymptotic) concentration trend, and states that such trend will be tracked. In order to enhance FRL attainment predictive accuracy, Ohio EPA requests that predictions consider the linear trend of recent data. In roughly the last three to five years, concentration trends in all but two extraction wells have departed from exponential decline toward linear behavior. Nine of these wells have a steady trend above the uranium FRL as follows: RW-6, EW-27, EW-18, EW-20, EW-21, EW-22, EW-24, EW-23, and EW-30.

7. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: Appendix A, A.2 Assessment of Total Uranium Results
Page: Line: Code: C
Comment: Ohio EPA requests that future reports provide a discussion of monitoring well uranium FRL attainment progress. An assessment of monitoring well attainment is recommended because 56 of the 178 monitoring wells were in excess of the uranium FRL of 30 ug/L in 2012 (Table A.2-19). Thirteen of these wells have an upward trend, including monitoring well 83337_C1, located west of the former waste storage area. According to concentration maps for the first and second halves of 2012 (A.2-2B and A.2-3B respectively), maximum uranium was detected at monitoring well 83337_C1 between 2,660 ug/L to 2,450 ug/L. An assessment of monitoring well attainment is also recommended because reported concentrations are typically more representative of in-situ ground water than extraction well results. Monitoring wells with shorter screens are often less

influenced by pumping induced dilution, and thereby provide concentration results more representative of in-situ ground water.

8. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: Section 3.0 & Appendix A, A.2 Assessment of Total Uranium Results
Page: Line: Code: C
Comment: Ohio EPA requests that the established uranium background ground water concentration be reported in the assessment of uranium discussion.

9. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: Appendix A, A.2.1.1 Former Waste Storage Area
Page: Line: Code: C
Comment: Page 3 explains that some surface water samples collected in intermittent puddles in the northwest corner of the north WSA uranium plume exceed the uranium FRL. Please address whether surface water infiltration through these ponds could act as a long term source to ground water, and thereby prolong attainment of the FRL.

10. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: 3.3.1.6 Monitoring Results for Non-Uranium Constituents
Page: Line: Code: C
Comment: Ohio EPA requests that clarification be provided as to whether manganese concentrations in excess of the FRL (six wells) are associated with anaerobic reducing conditions. Uranium solubility is typically diminished under anaerobic conditions associated with elevated manganese. Manganese (IV) and ferric iron (III) reducing conditions which can diminish uranium mobility are typically characterized by depleted dissolved oxygen, negative oxidation reduction potential, depleted nitrates, and elevated total manganese and total iron.

11. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: 2.0 Remediation Status and Compliance Summary & Appendix 1.0 Operational Assessment
Page: Line: Code: C
Comment: Ohio EPA requests that future reports describe the statistical methodology that will be used to determine attainment of the uranium FRL.

12. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: A.5.0 OSDF Monitoring Results
Page: Line: Code: C
Comment: Ohio EPA agrees with the plan to reduce quarterly leachate sampling to a semi-annual frequency.

13. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: A.5.0 OSDF Monitoring Results
Page: Line: Code: C
Comment: Ohio EPA agrees with the proposal to cease quarterly vanadium sampling in Cell 5.

14. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: A.5.0 OSDF Monitoring Results
Page: Line: Code: C
Comment: Ohio EPA agrees with the proposal to discontinue tritium sampling due to a lack of detections.

15. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: A.5.0 OSDF Monitoring Results
Page: Line: Code: C
Comment: In regards to the proposal to prepare control charts after completing quarterly sampling in 2013, has consideration been given to analyzing detection monitoring results with different statistical methodologies, namely prediction-limits?

16. Commenting Organization: Ohio EPA Commentor: DDAGW
Section: Conclusion/Groundwater Page: Line: Code: C
Comment: Although the report indicates that shutdown of the ground water extraction is planned by year 2024, data reveal that uranium FRL attainment might be prolonged significantly beyond 2024 in some areas. As extraction well concentration data have become steady in the past three to five years, with a departure from exponential decline, predictions of attainment are becoming less conservative. Fifty-six of the 178 monitoring wells reportedly had uranium detections above the FRL in 2012. Of these, nine reportedly have an increasing trend with time, not supportive of attainment under current conditions.

17. Commenting Organization: Ohio EPA Commentor: FFS
Section: Appendix B, Table B.1-2 Page: B-6 to 7 Line: Code: C
Comment: With regard to the proposed surface water sampling changes, Ohio EPA maintains that surface water is one of the best sentinels for ensuring the integrity of the remedy at Fernald. Therefore we maintain that some of the proposed sampling reductions should not occur. Additionally, the variability in some of the data and the substantial increases in uranium concentrations in surface water suggest additional discussions are warranted regarding possible causes of these increasing concentrations. Listed below are the proposed changes and our agreement or disagreement with them.

SWR-01 – Agree with reductions proposed in Table B.1-2

SWP-01 – Agree with reductions proposed in Table B.1-2

SWP-02 - Agree with reductions proposed in Table B.1-2

SWP-03 – Agree with proposed reductions in metals and Tc-99. Other radionuclides should continue to be sampled annually.

SWD-04 – Agree with proposed reduction in radionuclides other than Ra-226. Ra-226 should continue to be sampled annually.

SWD-05 – Agree with proposed reduction of Tc-99. All other radionuclides should continue to be sampled annually.

SWD-06 - Agree with reductions proposed in Table B.1-2

SWD-07 - Agree with reductions proposed in Table B.1-2

SWD-08 – Agree with proposed reduction of Tc-99. All other radionuclides should continue to be sampled annually.